

THE



Artificial Gardiner.

The Second and Last Part.

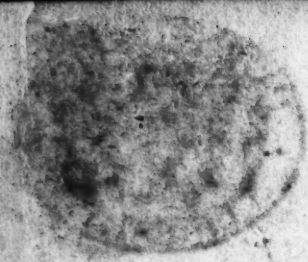
CONTAINING,

- I. The Nature of the *Hot-Bed*, and its Use in *Gardening*.
- II. Some farther Remarks concerning *Vegetation*, and of *Soils* and *Composts*, for forwarding the Growth of *Plants*.
- III. Of the Propagation of *Forest-Trees*.
- IV. A New Method of preserving *Exotick Plants* in the severest Seasons.

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T H E

Artificial Gardiner.

P A R T II.

C H A P. I.

Of the Hot-Bed, and its Use in Gardening.

TH E Advertisement, in the former part of this Tract, wherein Monsieur *Lechman* proposes to produce many sorts of fine Flowers in the Winter Months may be easily put in practice, by some of
B the

the following Methods, which I have
my self Experienc'd.

Horse-Litter, if it be fresh, or newly brought from the Stable, is the most common of all other Artificial Heats us'd by the Gardiners; the Dung of Stone-Horses, Mules or Ases, have been said to be the best; any one of these will do for our purpose, if rightly manag'd; for which Reason we must consider: First, the degree of Heat requir'd to answer that of a Summer Month, even and regular, not scorching, but a moderate sweating Heat; to produce which, take Two large Cart-Loads of the Soil before mention'd, throw it up in a heap, with a small quantity of Coal-Ashes mix'd among it, Water it very well, and let it lie for Three or Four Days; then make a Bed of it about twelve Foot long, and about three Foot broad, spread it with a Fork as equally as may be, then tread it down gently,



gently, and as even as you can; after which it must be well water'd, and a *Frame*, and *Glasses* put over it.

The Day following, cover the Bed with fine sifted Mould about five Inches deep, which may be fit to Plant upon three or four Days after, as you find the Heat answer the above Direction.

About three Weeks after it has been planted the Heat will decline, inso-much, that if the the Weather be very Cold, you must renew the decaying Heat, with fresh Dung, in the following manner, which is call'd Backing, or undermining a Bed.

Cut away as much of the side of the Bed as you can conveniently, slopewise, so that as far as is possible you may understate your Bed with New Litter, prepar'd with Coal-Ashes as before directed; treading it in, and

laying as much as conveniency will permit round the whole Bed, almost as high as the top of the Frame; but great Care must then be taken, that your young Plants are not scorch'd with this fresh Heat, which will presently begin to rise; so may this Work be repeated throughout the whole Winter, when there is occasion for it.

But in case it may be thought more easie to make fresh Beds, rather than to recruit the Heat of the old ones, I shall propose a Method of removing *Cucumbers, Melons,* and such like Plants every three Weeks, from one Bed to another without hazard.

Get some Baskets open on their side, made with Willow Twigs, about the compass of a Peck, or somewhat larger, four or five Inches deep; set your Plants in these Baskets, and in the fairest Weather, free from
Wind

Wind; convey them from time to time into these new Beds. In these Baskets, or common Garden-Pots, may be planted any Bulboa Roots, such as *Tulips*, *Hyacinths*, *Ranunculas*, *Jonquils*, *Frettilaries*, *Spring-Crocus's*, *Ornithogalum*, *Anemonies*, *Snow-drops*, and such like: Let the Earth be light, and well sifted, plant them about the beginning of *August*, if you would have them very forward; when you have prepared this Plantation, let them be expos'd to the open Air for fifteen or twenty Days, to be well settled with a Shower of Rain, before you put them into your Hot-Bed, these will blow in about two Months afterward; so that to keep up this little *Partere* all the Winter, you must continue to plant once a Month till *Christmas*.

But here it must be consider'd, That the Precoc's *Tulips* will blow naturally in *March* or *April*, double
Anemonies

Anemonies in the same Months, and *Crocus*, *Snow-Drops*, and *Hyacinth*, with some single *Anemonies* will open their Blossoms towards the beginning of *February*, or somewhat sooner, if they be planted in the natural Ground, and have the benefit of moderate Weather; therefore I shall leave the choice of every sort to him that makes the tryal of these things. To these might be added *Crown-Imperial*, *Iris*, *Narcissus*, which are of themselves forward blowers.

In like manner may be produc'd *Auricula's*, *Double-Pinks*, *Polyanthos*, *Pancies*, *Violets* and *Hepatica's*, or other forward blowing fibrous rooted Plants, to have them Blossom from time to time as they shall be encourag'd by this *Artificial Heat* of a Hot-Bed.

If you have a mind to raise *Strawberries* very early, plant some large Roots of them in Pots, or Baskets, about

bout the latter end of *August*, water
 them well; and about six Weeks be-
 fore you would have them ripe, put
 them on the Hot-Bed, give them con-
 venient Air when they begin to Flow-
 er, provided the blitening Winds or
 Frosts are not too severe; for Air is
 natural to these Plants, and is abso-
 lutely necessary to Nourish as well as
 Set the Fruits, and the same must be
 observ'd in the raising of those Flow-
 ers which I have already mention'd;
 for you must consider, they are natu-
 rally hardy in themselves, and do not
 require this Warmth to preserve them
 in the Winter, but only to supply
 them with such a degree of Heat, as
 is equal to that of the Spring; but by
 the way, you may be assur'd, That
 whatever Plants are thus forc'd will
 very rarely, or never recover them-
 selves after they have lost their natu-
 ral Season.

Kidney-

Kidney-Beans are a kind of Plant which will yield a considerable Profit, if they are brought to bear Fruit about *January, February* or *March*; nay, even in *April* or *May*, they bear a good Price, and these may be rais'd in the Baskets I have directed, and the Hot-Bed. I have seen, and eat of such about *Christmas*, as have been produc'd in the following manner: Sow them in *September*, about six in each Basket, giving them a very moderate Heat till they come up, and then as you find some of them stronger than others, weed out the weak Plants, leaving only two good ones in each Basket, and allow them as much Air as may be convenient, to harden them against the approaching Winter Frosts, when, a moderate Air is very rarely found. In *October* prepare a new Hot-Bed for them, and place your Baskets in it as close together as you can, always filling up the Spaces be-

tween

tween them with Earth, to prevent the Steam of the Bed rising upon the Leaves of your Plants, which would be apt to scald them ; continue this Work once a Month till they bear Fruit fit for your Table, which will be, if the Weather be moderate, about *Christmas*, and so continue at least six Weeks.

In the severity of Frosts and Snow, let your Frames and Glasses be cover'd every Night with Horse-Litter, and take every opportunity to give them the Sun thro' the Glasses, and Air at the same time, if the Weather will permit, by opening the Glasses an Inch or thereabouts on those sides which are against the Wind.

The next Improvement from the Hot-Bed, is the Production of *Asparagus* in any of the Months between *September* and *March*, and there is nothing

nothing more easily perform'd than
this Work.

When your Hot-Bed is prepar'd and
cover'd with Earth about six or seven
Inches deep, provide your self with
Asparagus Roots, to the Number of
about one Thousand, let them be such
as will produce large Buds, trim their
Roots, and plant them in Lines as
close together as you can well place
them, and cover the Buds with Earth
about three Inches, then put on your
Glasses, and cover them with Horse
Litter, letting your Plants, when they
come up, have the light of the Sun
and what proportion of Air you can
venture to give them, for it is the
Air will make them Green.

In about six Days after they have
been planted the Sprouts will begin
to appear, and for a Month together
you may cut some every Day. If
you are desirous to continue this Work

all the Winter, make fresh Beds every Month, in the same manner here proposed.

From this we may see, That from the first making of the Bed, it is not much more than a Fortnight before the *Asparagus* will be ready for the Table.

Peas and *Beans* have been often raised in the midst of Winter, by the help of Hot-Beds ; but their produce is so trifling when they come to be shell'd, that I shall rather propose some other Method for their Cultivation when I speak of *Cherries* and other Fruits.

I shall now proceed to speak of *Cucumbers* and *Melons*, and propose some Rules which I think may tend to their more certain Culture, than what is commonly made use of.

The

The *Cucumber* and *Melon* Plant seems to differ but in one Point, in respect to the use made of them in Gardens. The first of these Plants has its Fruits always eat while it is green and the last is never gather'd till it is ripe. They are both Annuals, and consequently partake of the same Nature of all other Exotick Annuals whatever. For which Reason, if we should raise them in Autumn, and make them produce Blossoms before the Winter began, they would certainly perish ; but, if they can be raised that they may gather some Strength, and consist only of about three or four Joints, they will be more easily preserv'd in Frosty Weather than these Plants which are raised from Seed in *December* or *January*. I have my self sow'd several sorts of Annuals about *August* and *September* which have come up and maintained themselves all the Winter in a com-

mon

non Green-House, and in the Spring following, have begun to blossom before any others of the same Sort have begun to appear.

Now it is very reasonable to believe, that a Plant of this Sort will be better able to bear the Cold, when it has had the Advantage of the gradual declining Season to harden itself, and strengthen its Parts, than if it was to make its first Appearance in the midst of Frost and Snow, for then they come up so tender, that the Breath of a Man's Mouth wou'd tear them to pieces; therefore to bring these Plants forward, let me recommend two things, first, not to sow either *Cucumbers* or *Melons*, till the Beginning of *February*, when the Frosts begin to decline, or else, sow them in *October*, so that they may be planted out in the *Baskets*, where they are to stand, and
 C gather

gather Strength ; before the extrem
Frosts of *January* begin.

CHAP. II.

*Some farther Remarks concerning V
GETATION, and of SOILS
and Composts, for forwarding the
Growth of PLANTS.*

ALL Soils, that I know of, may be reduc'd under these Three general Heads, *viz. Sand, Loam, and Clay*; for all others, altho' they may bear different Names, are, in some Respect, depending upon one or other of these. *Gravels*, and all the open Soils, 'till we come to the *Loam* mention, are of the *Sandy Race*; and the binding *Earths*, from *Loam* downwards, 'till we come to the Stiffness of *Chalk* itself, may be ranged with the *Clay Kind*. I find all these Soils are alike tending to *Vegetation*, and have

have their *Salts* proper for it, but in different Proportions of Quantity; that is, a Peck of *Clay* has perhaps twice as much *Salts* in it as the same Quantity of *Loam*, and that Quantity of *Loam* twice as many *Salts*, as the same Proportion of *Sand*. Now from this Argument of mine, it may seem, at first View, that *Clay* is the most proper *Soil* to forward the *Growth* of *Plants*, whereas we know that *Sand* is much more apt to produce *Plants* quicker than any other *Soil*: but give me leave to explain this Paradox. *Clay*, whose Parts are closely wrought together, will not easily give out those *Salts* contained in it; neither can the tender *Fibres* of every *Plant* make their Way thro' it, in Search of their Nourishment; but if we open its *Parts* by digging and breaking it into small Particles, and keep those *Parts* open by a Mixture of some sharp *Sand*, or other Body of the like Nature,

we shall not fail to see the Effect of its Vigour.

On the other Hand, *Sand* is apt to push forward the *Plants* growing upon it early in the Spring, and will even cause them to *Germi-
nate* near a Month sooner than the *Plants* growing upon a *Clay* the Reason is, that the *Salts* in a *Sand* are at full Liberty, to be rais'd and put in Motion, upon the least Approach of the Sun's Warmth: But then as they are hasty in their Work, so are they soon exhal'd and lost.

The *Clay* has certain *Plants* growing upon it, which are natural to it, and consequently thrive better in it than in any other *Soil*.

And the *Sand* likewise has its natural *Plants*, which delight in it, and will not equally prosper in any other *Earth*.

How-

However both the *Clay Plants*, and those of the *Sand*, will grow in the *Loamy Soil* I have mention'd, for that it partakes of the Qualities of *Sand* and *Clay*.

I might here take Notice that the Word *Loam* is variously reciev'd, and understood by *Planters*. Some mean by it the most common superficial *Earth* met with in *England*, without any Regard to the Proportions it bears of *Sand* or *Clay*. Others wou'd have it more inclining to *Clay* than *Sand*; however I shall endeavour to avoid all Disputes that might arise concerning it, by once more repeating, that when I shall have Occasion to mention it, I mean only that Degree of *Earth* which equally partakes of *Sand* and *Clay*.

This *Earth* then, which I call *Loam*, may either be of a black or yellow Colour; but let it be the

one or the other, Experience shews us that *Plants* of all Sorts will grow in it, and for the Reasons I have before mention'd, it appears to be a more beneficial *Soil* than any other where-ever it happens to be found.

Now, as I take it, seeing that *Loam* is so happy in its Productions that even *Plants* naturally bred in different *Soils* will thrive in it, it then seems reasonable, that if by Mixtures of *Natural Earths* one with the other we make such a *Compost* as may imitate it, we may expect far greater Success from a Mixture of that Sort (especially in *Plantations* of durable *Trees*) than any Composition we can devise to be made with *Dungs*, or other forcing Ingredients.

It is true, *Hot-Beds*, or any other Means of the like Nature, would indeed forward the *Growth* of *Trees*, perhaps

perhaps as much in one Year; as Nature herself would do in six: Or as Dr. *Agricola* of *Ratisbonne* pretends by his artificial Compost to raise *Forest Trees* to exceed the Height of twenty Foot in a few Days time; but we may be assur'd they can never last out half their Days; I would therefore advise, as well from what I have said, as from the Observations and Inquiries I have made of the Growth of *Timber Trees*, that they may not be forced by any violent Means, if we design them to last long and improve themselves, to be valuable; neither to take them from a Nursery of rich Ground, and expose them afterwards in such *Land* where they may want the same plenty of Nourishment they have been used to; for then they would certainly decline and deceive us. Let the Earth we design to plant in, be fresh and well open'd in its *Parts*; and if it should be sifted, it will help the

the striking of young *Roots* at first planting, and support them, till they can gather Strength.

I think I need not further explain, that equal Quantities of *Sand* and *Clay* well mix'd together will afford us the desirable *Soil* we seek after, in case the *Loam* or *Mother Earth* I mention cannot be conveniently met with. But this has its greatest Use, when we make new *Plantations*, for we ought also to examine the Depth of the *Soil* underneath, into which our *Trees* are afterwards to push their *Roots*, and from whence they are to draw their chief Nourishment and that may be best known from Observation; that is, by examining the most vigorous *Trees* of every Kind, and observing the *Qualities* and *Depths* of the *Soils* they feed from, and from such Examples, to make our *Plantations* accordingly. we shall then find that an *Oak* will never

never make good *Timber*, if it be *planted* or *sown* upon a shallow Rocky Soil, and at the same time that an *Asb* will grow there.

And now seeing that some delight more in the quick *Growth* of the *Trees* they plant, than the Advantages which would accrue to their Families, from a regular and natural *Growth* of their *Plantations*, I shall mention some Mixtures, which have been experienc'd to forward the *Growth* of *Trees*.

Mixture the first. If the Soil be stiff inclining to *Clay*, let it be well broke and open'd, of which take about five Load; add to it an equal Quantity of *Heath Turfs* burnt, let these Ingredients be well mix'd and sifted, or skreen'd together, after they have lain for a Winter in a *Hedge* or *Ridge*. This Compost will forward *Trees* extreamly.

Second

Second Mixture. To four Load of *stiff Soil* broke and open'd as before add as many Load of *sharp Sand* to which put two Load of the *Ashes* of *burnt Furzes, Gorse, Fern, Weeds* or *Wood*; let this be well mix'd together about *September* or *October* and be laid up in a *Ridge* 'till the *February* following, to be skreen'd or sifted for Use. *Sir William Bruce*, a Gentleman of *Scotland*, made Use of the like *Mixtures* in his Garden, with the Success he desired.

Third Mixture. One Load of *Rotted Wood*, such as may be found under a *Wood Pile*, or for want of that the same Quantity of *Rotten Leaves*. To either of these add a Load of *burnt Grass Turf*, two Load of *Sand*, and the like of *stiff Soil*; this Composition must be well mix'd and laid in a *Ridge* from *October* till *February*, and be sifted for Use.

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N. B. These artificial *Soils*, should always be compos'd about *October*, and sifted the following Spring just before you use them; for if you prepare them in the Spring, the Summers Heat would exhale their *Volatile Spirits*, and besides *Weeds* would be apt to rob them of their Nourishment, unless they were to be in some shady Place under *Trees*.

Fourth Mixture. Take the Quantity of a Load of *Rape Seeds*, after the *Oyl* is press'd from them, which may be very easily had at the *Rape Mills* at a small Expence; add to them two Load of *Sand*, one of *stiff Soil*, and one of burnt *Heath*, or *Grass Turf*, prepared as the others, and sifted, will greatly forward the Growth of any *Plant*.

Fifth Mixture. Take one Load of *Wheat Grains* (after Brewing) add to it two Load of *Sand*, and two of *stiff*

stiff Soil, mix'd and prepared as before, it will make an incomparable *Compost* to hasten the *Growth* of *Plants*.

Sixth Mixture. *Sheeps Dung*, with a like Quantity of *Wood-Ashes*, and twice as much *Loam*, or *Mother Earth*, prepared as before, will greatly forward the *Growth* of *Herbs* and *Trees*.

Seventh Mixture. Take of *Horse Dung* well consumed, two Load, add to it one Load of *Turf Ashes*, two Load of *Sand* and two of *stiff Earth* prepare this *Mixture* as before, and it will greatly forward *Germination* of *Plants*: But if *Sea-Coal Ashes* are more easily found, put them in the Place of the burnt *Turf*, and then add one Load of *stiff Earth* to the *Compost*.

I could say much more upon this
Head



Head, but as it is my Design to be as short as may be convenient, and purposing chiefly in this Treatise to contribute such Experiments as may tend to the Improvement of *Plantations of Forest-Trees*, I shall not here enlarge upon *Soils*, but sum up this Chapter, with two or three Remarks. First, that a *Preparation* of natural *Soils* answerable to the *Loam* or *Mother-Earth* I have mention'd, is certainly the best for all Sorts of *Forest-Trees* to be planted or sown in, if we design them to make good Timber; and if it is rather desir'd that such *Trees* should grow quick, and consequently, be subject to decay early, or be prejudic'd by *Blights*, I have made mention of such forcing *Composts* as will set them forward in *Growth*; but, in my Opinion, might be better employ'd in Gardens for the Production of short-liv'd *Plants*.



C H A P. III.

Of the PROPAGATION
FOREST-TREES.

AS there is nothing which contributes more to the *Honour*, *Beauty*, and *Welfare* of an Estate than timely and sufficient *Plantations* of *Timber-Trees*, so I have chosen to make the *propagating* of *Timber* my present Subject, and what I have said in the former Chapter may, I hope, contribute something towards our Success in the Undertaking which will so greatly contribute to the *Welfare* of every Man of Estate if it be rightly understood: For although a Gentleman may perhaps be possess'd of a plentiful Fortune, suppose of 10000 *l. per Annum*, he ought certainly to consider that in process of Time he must provide Fortune

for Children out of that Estate, proportionably to his Honour; and again, his Children must likewise make farther Provisions out of their several Parcels for their Issue, and so on, 'till at length, in six or seven Generations, we shall find the Paternal Estate cut to Pieces into so many little Shares that there will hardly remain any Idea of the plentiful Stock of their Ancestors. Now I say, it would certainly be a Token of great Wisdom, for every Gentleman of Fortune, not only to consult all proper Means how to maintain the Bulk of his Estate entire, but continue it so in his Line wisely guarded against the Hazards of Fortune, and even the natural Consequences I mention, by timely and necessary *Plantations* upon it, which would be so many Monuments of his Wisdom, and improving Treasuries for the good of his Posterity; and besides how beneficial would

such *Plantations* be in Case of extraordinary Accidents, the Profuseness of a young Heir, the Discovery of Iron or Lead Mines, where Wood is of such extraordinary Use; or for the raising a Sum of Money upon any Emergency: I may add likewise, beside the private Interest of the Proprietor, it would be of general Use and for the Nation's Good. How happily is *England* situated for Trade. What Benefit does she receive by her Shipping? And therefore how profitable and useful is her *Timber*. Which will yet become more valuable than ever, in that so much is continually cut down, and very little Care taken to make new *Plantations* for future Benefit. In a Word, the present State of *Timber* in *England* is so very inconsiderable in respect to the great Use made of it, and even that which remains growing is generally so much neglected in its Culture, that I hope some

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Directions for its Improvement may not be unacceptable to the World.

The *Trees* which have been commonly propagated in *England*, for *Timber*, are the *Oak*, *Ash*, *Beech*, *Elm*, *Chestnut* and *Walnut*; these are the upper Class, and we may add to them the *Ilex* or *Ever-Green Oak*.

The *Oak* like all other Plants has its Varieties, which is taken Notice of by the *Botanists*. I have observ'd about five Sorts in *England*; but I shall only recommend two Kinds of them to be planted for *Timber*. The first and best in my Opinion is the *Upright-Oak*, which grows more Erect than any other; and the second is the *Large Spreading Oak*. We have many Instances of these Kinds that have attain'd to such prodigious Greatness of Stature, that the *Timber* alone of one Tree has been sold for upwards of 50*l*. The *Oak* doth not only afford us the most serviceable *Timber* for Naval Architecture,

reature, but also for other Building
 Its *Bark* is useful to *Tanners*, and the
Oak is therefore cut down about
April, when its *Bark* will peel. The
Acorns are excellent Food for Hogs.
 This Tree delights in moist Ground
 of a good Depth, and will prosper
 in the coldest *Clay*, and, as Mr. *Eve-*
lin says, in *Gravel* also. It is noted
 likewise that some *Oaks* having been
 sown in Hedge Rows, have in the
 Space of 30 Years borne a *Stem* or
Trunk of a Foot Diameter. I have
 my self seen some seedling *Oaks* of
 20 Years Growth of near that Sub-
 stance, which had never been remo-
 ved from the Place where they were
 sown; and I would advise that eve-
 ry *Plantation* of *Oaks* be set from
Acorns on the very Spot where they
 are to remain, and that we are like-
 wise careful to chuse our *Acorns*
 from thriving vigorous Trees: The
 Distance between them ought to be
 about 33 Foot, and the said Space
 be

between the Oaks should be inter-sown or planted for *Underwood*.

Of the *Ash* there are two Sorts (falsely distinguish'd by the Names of *Male* and *Female*) which most deserve our Care, in that they are quick Growers, and rise to a prodigious Stature; besides these, there are several other Kinds, which are not worth our Notice; so that we ought to be careful in the Choice of the *Keys* or *Seeds* we design to sow. I have heard of *Ash* Trees of 40 Years Growth from the *Seed* that have been sold for 25 Pounds apiece, which have grown on Plains in light *Earth*, not very deep, and Mr. *Evelin* tells us, that one Person planted so much of this sort of *Timber* in his Life-time as was valued worth Fifty Thousand Pounds to be bought, which he justly remarks was very good Encouragement for a small and pleasant Industry. The *Keys* of this *Tree* are sowed about *October*, or else may be

be laid at that time in *Sand*, S. S. S. 'till the following Spring, and then sown. The *Timber* of the *Ash* is used for Ploughs and Axel-Trees, Wheel Rings, Oars, and many other mechanick Works, and if we propagate the *Ash* for *Underwood* only, it will turn to good Account for Hoops and Hop-Poles. It may be cut about *February*. The *Beech* delights in Mountains. In *Berkshire* in the *Chalky Hills* this Tree is very prosperous, and attains a considerable Stature; its *Timber* is used about Keels of Ships, and many Implements of Husbandry; it is the most common *Fire-wood* of *England*, especially about *London*, where Billets are usually burnt. Among the Coal-pits near *New Castle upon Tyne* this Wood is much used to make Cart-Ways, where for many Miles the Wheels of the Cart run upon it, which saves the Expence of Horse-Flesh. This Wood will remain sound for many Years, in those marshy Lands,

Lands, and is much esteem'd for that use. From the *Seed*, which is call'd *Beechmast*, the *French* have long since drawn a sweet *Oil* for eating, and lately the same has been practis'd in *England*. This *Seed* is likewise good to feed *Deer*, *Hogs* and *Fowl*; it may be sown about *October*, or put in *Sand* like the *Ash-Keys*, 'till *Spring*, the better to preserve it from *Vermin*. The *Timber* may be cut as the former.

We have many Sorts of *Elm* frequent in *England*, among which the *Vulgar* or *Mountain Elm* is counted the best for *Timber*; I shall therefore recommend this *Sort* to the Planter, before all others. It may be propagated from the *Seed*, or *Samera*, which ripens and falls from it towards the latter End of *April*, or Beginning of *May*; it must then be sown in fine sifted *Earth*, or what I call *Loam* in the foregoing Chapter. This *Seminary* must be made in a shady Place,
and

and water'd from time to time, as the *Earth* begins to dry; but besides this Way of raising *Elms*, we may either propagate them from *Layers*, or *Suckers*; which last must be transplanted into *Beds* of fine *Earth* about the Beginning of *March*, and kept well water'd. And so naturally is the *Elm* inclined to *Vegetation*, that I have heard some affirm, by sowing only the *Chips* of it in a Piece of plow'd Ground, they have raised a large Quantity of these Trees, which perhaps is not impossible; for I am assured in other Cases the *Buds* and *Leaves*, nay the very *fibrous Roots* of *Plants* have been made to *vegetate* and produce Trees; as for Example, the single *Leaves* of *Oranges* have been made to strike *Root*, and produce *Branches*, *Leaves*, *Flowers* and *Fruit* by setting them half way in the *Earth* however let us raise our *Elms*, which way we will, I shall advise that they be not *planted* out of their first *Bed*.

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till they have stood there two Years;
 and then remove them to greater Di-
 stances from each other, and let them
 so remain 'till you plant them out for
 good, at about 20 Foot Distance, in
 Beds of the sifted *Loam* directed, they
 grow quick, give a fine Shade, and
 afford valuable *Timber*; and if the
Witch Elm, or *Dutch Elm* be grafted
 upon this Kind, we may expect them
 to make *Shoots* of about 8 Foot in one
 Year, and produce *Leaves* of an ex-
 traordinary Bigness, but the Wood
 will then be not so valuable. This
 Tree delights in an *Earth* competently
 fertile, neither too dry or sandy, or
 too cold or spungy; nor does it require
 a deep Soil. Let it be moderately re-
 fresh'd with Water after *planting*, and
 to keep the *Earth* about the *Roots*
 more open, and ready to receive Wet,
 cover the *Bed* it is *planted* in with rot-
 ten *Fern*, or some such like Matter.
 A Year or two after *planting*, you
 may refresh the young *Fibres* at the
 Extremi-

Extremities of the *Roots* with some fine sifted *Earth*, or any one of the four first *Mixtures* mention'd in the foregoing Chapter, which will make the Tree shoot prodigiously, for that they contain *vegetable Salts* in great Abundance. The *Timber* of this Tree is very serviceable, especially where it may always lye wet it will last a long time; it is mightily used for Pipes, Pumps, Mills, and such Parts of Ships as lye constantly under Water; in a Word it is almost of general Use. The time of Felling it is from November to February.

We have two Kinds of *Chestnut* in *England*, that which bears *Edible Fruit*, and the other which is call'd the *Horse-Chestnut*: The first of these *Trees* affords good *Timber*, and the latter is only desirable for its pleasant Shade and beautiful Flowers. these *Trees* may be raised by setting the *Nuts* about three Inches deep in a light sandy *Soil*, towards the latter

latter End of *February*, or Beginning of *March*; but as the first only is useful, so I shall chuse to recommend it to the *Forester*. It delights in high Grounds remote from Water, which would spoil both its *Timber* and *Fruit*, and should indeed be set from the *Nut*, where 'tis always to remain, for it's apt to suffer greatly by removing, and spreads too much in its Branches, when it loses its *Tap-root*, as all other *Tap-rooted* Trees are known to do. Its *Timber* is lasting if it be kept dry, and good for Building; and if it be planted for *Underwood*, it will afford excellent Poles and Stakes in nine Years after sowing, worth at least 10s. per Hundred: The *Fruit* is sometimes used at our Tables, but more commonly given to *Deer* and other Cattle to fatten them. We may fell this Tree any time between *November* and *February*.

Among

E

Among the *Botanists* there are reckon'd many sorts of *Walnuts*, two only of which I shall recommend to the *Planter*, viz. That with the *soft Shell* for the sake of the *Fruit*, and that with the *black Grain* for the Goodness of its *Timber*; they are both rais'd from the *Nuts* like the *Chestnut*, and should like them be sown in the Places where they are to remain. They are in great Danger of Death if they lose their *Tap-root*, but will thrive extreamely if they have Depth of Earth to strike into. The *Walnut* grows well in *Loam*, but will flourish also in *Chalk* or gravelly *Soil*, either on hilly Ground or in a *Vale*, which (I think) shews it to be a foreign Plant; for, as I have observ'd, every Plant natural to *England*, has a *Soil* and *Exposure* peculiar to itself, and will scarce be made to grow in any other Sort of *Land* or *Situation*. I have seen some *Walnut Trees* of forty Years Growth

Growth, from the setting of the *Nuts*, that were valued at five Pounds a-piece, and others standing by them, which were Trees Planted at the same time, (as the Owner himself inform'd me) that were not worth thirty Shillings a Tree; and the like Observation has been made of other *Tap-rooted* Trees, but particularly the *Oak*, so great is the Difference of *Growth* in downright rooted *Plants*, when they are set from *Acorns* or *Nuts*, and *transplanted* from the *Nursery*. The *Timber* is much used for *Chairs*, *Cabinets*, and *Household Furniture*; it is durable, and an Enemy to *Worms*, from its exceeding Bitterness. The *Nuts* yield Abundance of *Oil*, and take Place among the best *Fruit*, for the *Table*. This *Tree* may be cut down when the *Sap* is fix'd, i. e. from *November* to *February*.

The

The *Ilex* or *Evergreen Oak*, is a *Plant* which produces admirable *Timber*, but is more particularly valuable for its *Knee Timber*, which is much tougher than that of our *English Oak*; 'tis in such Request among our Ship-Carpenters, that many Ships lading of it has been brought to *England*. The *Tree* is of quick *Growth*, and will attain to a very considerable *Height*, even to equal the tallest of the *English Oaks*, to which *Perfections* we may also add the *Beauty* of its *Leaves*, which are green all *Winter*.

CH A P. IV.

*A new Method of preserving Exotick
PLANTS in the Severest Seasons.*

THE Subterraneous Fires commonly used in Green-Houses, and other Conservatories, for Exotick Plants,

Plants, are too apt to raise Damps in those Places, especially in Frosty Weather, when the Houses are closely shut up. Now if it happens, that a Frost should continue for the Space of Two Months, their Fires must likewise be continued for that time, which would be injurious to the Plants, by covering them with an unwholesome Moisture, and thereby preventing the free Circulation of their Juices, which will cause a Mouldiness on them, and Rot them.

A Second Inconvenience which may attend Plants from these Fires, is the Smoak, which will always find its way into the House, and by lodging upon the Plants, stop up their Pores, and suffocate them: How prejudicial Smoak is to almost every Plant, may be seen in the City of London, in many Places.

The

The Third Inconvenience from this Invention is, that the Flues or Conveyances for the Fire, are often out of Order, their Coverings being chiefly made of Tiles, which are either broken by the Violence of the Heat, or some accidental Weight, which may happen to be set upon them.

But the ingenious Gardiners in *Holland*, have a far better Invention than this, for the warming of their **Green-Houses**. They Place at each End of their Conservatories a Large Stove, as they call them, which are Large Iron Boxes, with Chimnies of the same Metal; into these they put a Quantity of Fire sufficient to heat them through, and by that means warm the Air in the House, without the ill Effects which attend subterraneous Fires. But with all this Contrivance, the Air will remain without

without Motion, and only contribute to the Preservation of the Plants, by keeping the Frost out of the House.

It is therefore plain, that nothing contributes more to Vegetation, than a free Passage of a temperate Air round about a Plant; and I see no Way so well to effect this, as by the new Invention of Chimnies to throw warm Air into a Room, so as to make the Heat equal in all the Parts of it; which is now improv'd, and brought to Perfection, by the Reverend Mr. *Desaguliers*, A. M. F. R. S. The Manner of performing it, take in his own Words.

“ Since the first Publishing of my
 “ Book, intitl'd *FIRE* *Improv'd*,
 “ Mr. *Du Bois* Architect, and my
 “ self, having joyn'd in the Undertak-
 “ ing; have by help of Mr. *Hat-*
 “ *well* and Mr. *Vream* (our Work-
 “ men) tried a great many Ways of
 per-

“ performing this new Contrivance,
 “ and find that Iron is far the
 “ cheapest, most wholesome, and most
 “ lasting for the *Meanders* about the
 “ Fire; which the aforesaid Work-
 “ men have made use of with good
 “ Success, as may be seen at Mr.
 “ *Curli's*, or at my House, where a
 “ large Room, and the next to it,
 “ is warm'd, for two Thirds of the
 “ Expence which the *French* Au-
 “ thor, *Monsieur GAUGER's* Me-
 “ thod of Brass Covings would re-
 “ quire. I need not enlarge upon
 “ the Benefit reap'd by these new
 “ Chimnies, because there are al-
 “ ready so many in *London*, made
 “ by Mr. *Du Bois's* and my Dire-
 “ ctions (without having fail'd in
 “ one) that most People must be sa-
 “ tisfied of the Usefulness of the In-
 “ vention. I shall only beg leave
 “ to add, that they are absolutely
 “ necessary in Green-Houses, where
 “ Exotick Plants are kept, all other
 Mean

“ Means of Artificial Warmth being
 “ prejudicial to them, either upon
 “ account of the Smoak, Steam, or
 “ Air too much confin’d. We can
 “ give every Plant an Air and
 “ Warmth proportionable to any
 “ Degree of Latitude from which
 “ the Plant is brought, so as to
 “ preserve them in the severest Win-
 “ ters. And such Gentlemen, who
 “ have been discourag’d from keep-
 “ ing Exotick Plants, because of the
 “ Difficulty of preserving them, may
 “ now give that Beautiful Ornament
 “ to their Gardens, by only being
 “ at the Charge of the New Stove-
 “ Grate.

FINIS.



Two Books Printed for E. Curll at
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stan's Church in *Fleetstreet*.

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